R E P O R T R E S U M E S

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STATE OF NEW YORK STANDARD SCHOOL PLAN TYPE A-3, TWO-STORY 21-28 CLASSROOM ELEMENTARY SCHOOL.
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DESCRIPTORS- *ELEMENTARY SCHOOLS, *SCHOOL DESIGN, *SCHOOL LOCATION, SCHOOL CONSTRUCTION, SCHOOL EXPANSION, SCHOOL SPACE,

THE PROGRAM FOR A TWO-STORY ELEMENTARY SCHOOL FACILITY REQUIRED 21 CLASSROOMS WITH THE POTENTIAL FOR ACCOMMODATING AN INCREASE OF SEVEN CLASSROOMS. THE ECONOMICAL AND FLEXIBLE ZONED PLAN PROVIDES EXPANSION POTENTIAL WITHOUT UNDUE DISTURBANCE OF THE ORIGINAL FUNCTIONAL ORGANIZATION. ISOLATION OF DUAL-USAGE FACILITIES SUCH AS THE AUDITERIA AND PLAYROOM IS EFFECTED THROUGH CLASSROOM SEPARATION, GATE CONTROL, AND EXTERNALIZED SERVICE CIRCULATION. CLASSROOMS ARE DESIGNED FOR THIRTY PUPILS AND ARRANGED ACCORDING TO GRADE LEVEL. THE FIRST FLOOR, IN EFFECT, SERVES AS A SEPARATE PRIMARY SCHOOL WITH SELF-CONTAINED CLASSROOMS. HIGHER GRADES ARE LOCATED ON THE SECOND FLOOR ADJACENT TO THE LIBRARY. EMPHASIZED AS PROJECT CONSIDERATIONS ARE--(1) PROVISIONS FOR FALLOUT PROTECTION, (2) EXPANSION DATA, (3) BUILDING MATERIAL DATA, (4) STRUCTURAL DATA, (5) MECHANICAL AND ELECTRICAL SYSTEMS, AND (6) ADAPTIVE CONSTRUCTION DATA. FLOOR PLANS AND A PERSPECTIVE ARE INCLUDED. (MH)

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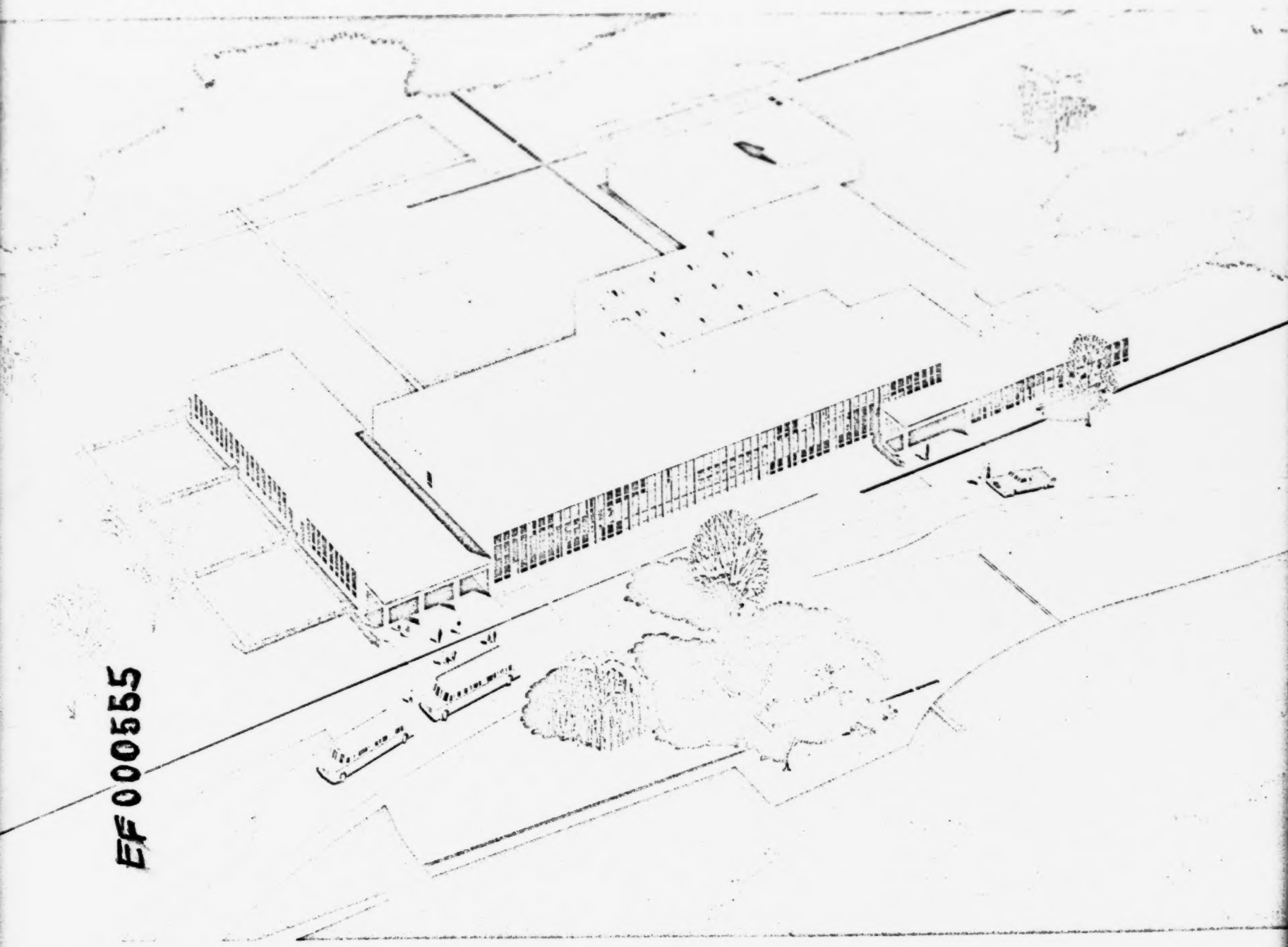
STATE OF NEW YORK
STANDARD SCHOOL PLAN
TYPE A-3



EF 000555

EXPANDABLE ELEMENTARY SCHOOL 21-28 CLASSROOMS • TWO STORY

STATE OF NEW YORK

STANDARD SCHOOL PLAN

TYPE A-3, TWO-STORY

21-28 CLASSROOM ELEMENTARY SCHOOL

-REPORT-

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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PREFACE:

In the interest of promoting realistic economy in school construction, the prime objective in the development of the documents for the Standard School Plan Type A-3 was to seek a solution for a well planned school plant with flexibility, having the basic elements of plan in simple direct shapes to avoid the additional cost of special fabrications required by unusual arrangements of structural components. Further, the design was to be of a type, which would permit rapid construction with substantial mass produced materials by average building mechanics with a minimum of effort.

Multiple use of certain areas was necessary to accomplish the purpose of the program, and desirable, since it would result in greater return on the investment.

It should be noted there was no attempt to create a monument, instead simple housing for carrying out an educational program in an orderly and systematic manner.

EDUCATIONAL FACILITIES AS PROVIDED IN PLAN TYPE A-3

These correspond satisfactorily to the recommendations of the State Education Department, and as modified in conference with other educational and architectural advisors.

TEACHING SPACES

No.	Title or Use	Comments
3	Kindergartens	
18	Classrooms	
1	Library	Related areas
1	Remedial Reading	
1	Double Playroom	Storage
1	Auditeria	Platform Stage

FUTURE EXPANSION

1	Kindergarten	
6	Classrooms	
1	Music Room	Optional
1	Larger Special Room	Optional
	Shower-Locker Rooms	Optional

ADMINISTRATIVE, PERSONNEL & COMMUNITY SPACES

No.	Title or Use	Comments
1	Administration	Suite
1	Conference	
1	Health	Suite
1	Faculty Room	
1	Teachers' Workroom	
1	Special Teachers	Second Floor
1	Kitchen	Related Areas

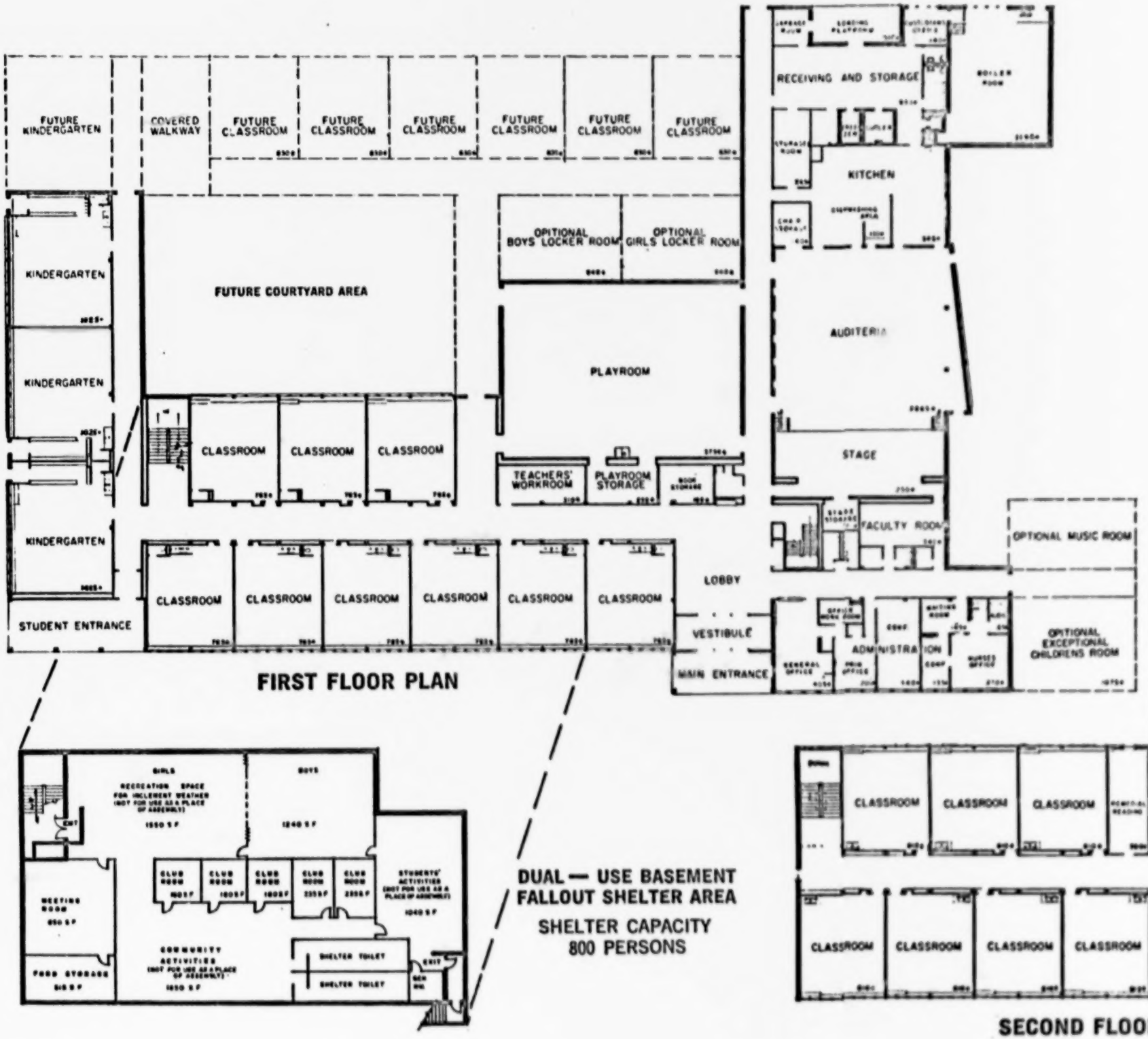
DUAL USE SHELTER AREA

2	Toilets
1	Generator Room
1	Recreation Space
1	Meeting Room
5	School Club Rooms
1	Food Storage
1	Community Activities
1	Student Activities

NOTE: The areas of all spaces noted above can be found in the floor plans.

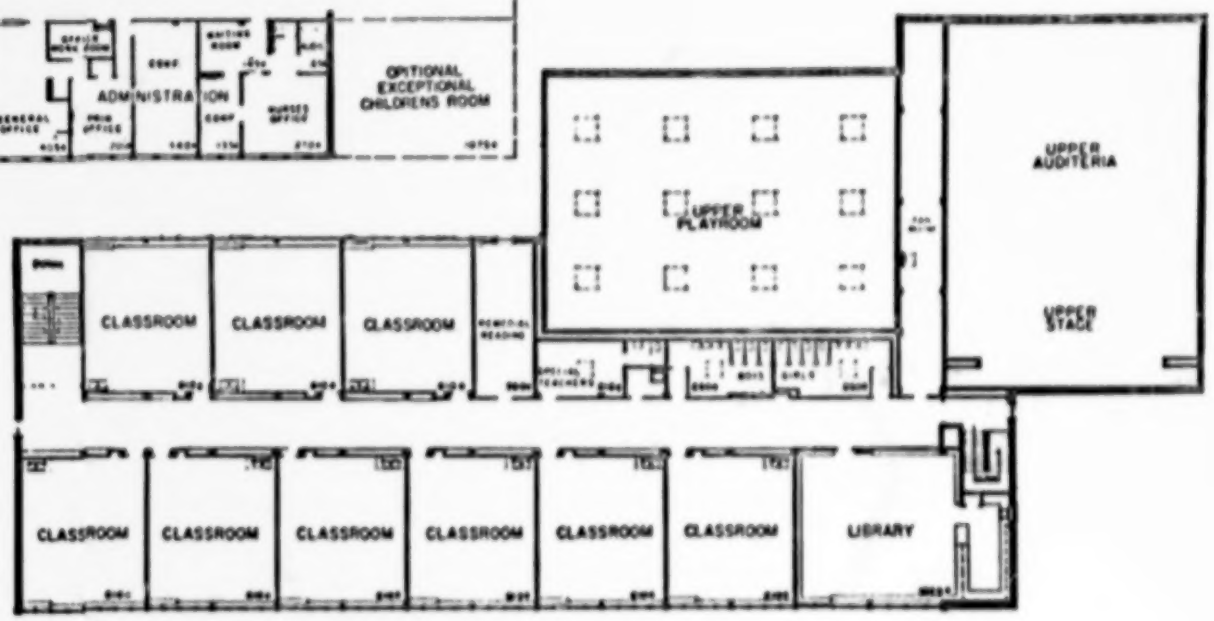
GRAPHIC
SCALE IN FEET
0 10 30 50
5 20 40 60

REPORT: N.Y.S. STANDARD SCHOOL TYPE A-3



FIRST FLOOR PLAN

DUAL — USE BASEMENT
FALLOUT SHELTER AREA
SHELTER CAPACITY
800 PERSONS



SECOND FLOOR PLAN

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REPORT

STANDARD SCHOOL PLAN TYPE A-3

21-28 CLASSROOM ELEMENTARY SCHOOL

EDUCATIONAL APPROACH:

Due to the nature of the project, it was necessary to plan the subject school to meet the possible needs of a large number of School Districts. Normally the character of a single School District dictates the objectives.

The type of design requiring an experimental teaching pattern or fixed school plant operation was avoided. In cases where a School District wishes to approach the educational process from an individualistic point of view, special "tailoring" of the school plant will be required.

In reviewing the general requirements of the program, various approaches to the solution were considered. Since a portion of of the building was to be two stories in height, the cluster design had little to offer. Study was given to the use of unusual shaped classrooms; however, it was decided that interest could be obtained in furniture arrangement with an approximately square space at a much lower cost.

After reviewing the advantages and disadvantages of omitting corridors, it became apparent the use of corridors would result in a safer building considering the second floor section. It was further concluded, a school building without corridors has many disadvantages, except in areas where temperatures are comparatively even throughout the year, and exterior access to

classrooms can be accomplished.

Upon completing the review of the above described theories in school planning, the "zoned" plan became the obvious answer to the problem, since it satisfied all requirements of the program. It is both economical and flexible. Additions can be made without undue disturbance of the original plan organization and exterior appearance of the building.

Proceeding on the above premise, the administration section was placed adjacent to the main entrance for good school plant control. Areas such as auditeria and playroom, because of the dual use by pupils and adults were located to permit isolation from the classroom sections by means of gates, and to allow for mobile approach to service areas without crossing the outdoor play areas.

It should be noted the stage in the auditeria can be used for an extension of the auditeria for certain functions. The faculty room immediately adjacent to the stage with direct access to faculty room can be used as a reception area for guest speakers or a dressing room.

Classrooms of a size to meet space requirements for thirty pupils are placed according to the age level of the pupils. Kindergarten rooms are in a position to readily accommodate the short sessions without disturbing the other classrooms, and to isolate the noise generally associated with the outdoor activities of the very young. First, Second and Third

Grade classrooms were placed on the first floor to eliminate small child traffic on the stairways.

It should be noted the first floor arrangement is, in effect, a primary school within a school.

All classrooms on the first floor are self contained. The self contained feature was selected for the lower grades to permit continuous teacher supervision. This feature was extended through the third grade, so these classrooms will be properly equipped, when occupied in part by second grade pupils, should the school plant be expanded.

The Fourth, Fifth and Sixth Grade classrooms are located on the second floor. Since the library is used mainly by pupils in these grades, it was located immediately adjacent. This arrangement forms an elementary section. Group toilet facilities will serve this section.

PROVISIONS FOR FALLOUT PROTECTION

The dual use fallout shelter included in this school was developed by the D.P.W. in cooperation with the Education Department and can be utilized in a variety of ways to augment the school program and the affairs of the community. Suggested functions which the shelter space might serve are: meetings of scouts groups on all age levels, meetings of other community organizations and school purposes such as student government quarters, publications rooms, recreation, areas for a variety of remedial purposes, administrative offices,

large group instruction and audio-visual activities.

The plans for the shelter are architecturally and mechanically complete with the exception of the structural design for the sub-grade work. This work is to be completed by the adapting architect to meet whatever the existing soil conditions might be.

The size of shelter space, the capacity of the mechanical systems, and the provisions for food and water storage are based upon the expanded capacity of the school with a proper allowance for teachers and staff. Any special conditions which will affect the capacity of the school will require changes in these factors of the fallout shelter design.

The location of the shelter under the building was made to obtain the best protection at the lowest possible cost. A change in the location of the shelter will necessitate additional shielding design. Shielding has been obtained by both separating with distance and with mass, the planes on which radioactive particles will rest in relation to the shelter area. It is to be noted that any dimensional or material changes in the area above the fallout shelter may affect the shelter design. For this reason the minimum mass of the interior partitions, floor construction, and total overhead construction upon which the shelter calculations have been based are indicated on the drawings. If materials of lesser mass than the tabulated values are used, redesign of shelter will be required. It also has been assumed in the

calculations, that finish grade is never below the bottom of the first floor slab around the shelter area. It is, therefore, necessary to maintain this grade in order to avoid redesign of the shelter.

The shelter plan indicates emergency water supply in a group of tanks within adjacent crawl space. Wherever an adequate supply of well water can be obtained it is suggested that the adapting architect substitute it as the fallout shelter water supply. The plans show self-contained toilet facilities in the form of sanitary tanks fitted with toilet seats. Wherever a septic tank and leaching field are available and the supply from the well is adequate, it is suggested the adapting architect substitute a system using periodic flushing of waste. Generator capacity should be checked, however, to be sure that an adequate power supply is made available, during the emergency period, for these possible substitutions.

The shelter area is designed for a minimum protection factor of 100 by use of "Design and Review of Structures for Protection from Fallout Gamma Radiation", an official Office of Civil Defense, Department of Defense Publication. In this respect is meets requirements of the New York State Civil Defense Commission.

Any changes to the shelter as specified and shown on the drawings should be discussed with and approved by the New York State Civil Defense Commission.

PROVISIONS FOR PHYSICALLY HANDICAPPED

Accommodations for the physically handicapped have been provided by substituting a ramp for the step at the right entrance to the corridor in front of the Administration Section. A water closet compartment in the Womens' and Mens' Toilet rooms opposite the Principal's Office has been equipped to assist the handicapped. One water closet compartment in each of the group toilet rooms on the second floor have been similarly equipped. Teacher assistance will be required in the self contained classroom. One drinking fountain on each floor will be mounted at a suitable height. The elevator in the location indicated on the drawings is an optional facility.

Installation of an electric "eye" for automatic control of doors at the entrance ramp may be considered as further assistance.

MODULAR SYSTEM

The working drawings were prepared using the modular method for designing and dimensioning, a method which employs the use of a horizontal and vertical grid for reference lines. The gridlines are spaced four (4) inches apart in length, width and height. The use of this system will result in greater efficiency in construction, since it requires less cutting and fitting and therefore less waste of materials. The possibility of dimensional error in preparing the working drawings and shop drawings is also reduced.

Modular measure is similar to standardization that has proved so fruitful in production methods in the automobile and other mass production industries.

Savings will be realized in the Contractor's office in preparing his estimate using the modular system because it will generate greater speed in take-off materials; errors are sharply reduced by the eliminate of dimensional fractions.

In the field more accurate work will be achieved with better appearance. Layout time in the field will be reduced by the simplified method of dimensioning with a reduction in the number of errors. All of the above will reflect in reduced construction costs.

FUTURE EXPANSION

Looking into the future in regards to expansion, provisions have been made in the drawings covering the work of all trades to increase the total number of classrooms to twenty-eight, and for other facilities indicated.

In the expanded school, one classroom would be added to each grade level. The second floor would accommodate one (1) fourth grade classroom, four (4) fifth grade classrooms, four (4) sixth grade classrooms. The first floor would be rearranged with three (3) third grade classrooms and three (3) fourth grade classrooms located in the suggested addition at the rear center of the building.

The future Music Room and Exceptional Child Center are located as shown, because of the nature of use and permit easy access to Playroom, Auditeria, and in the case of the Exceptional Child Center, the added possibility of access to a separate outdoor play area without obvious segregation.

If so desired, locker rooms can be added to serve the Playroom.

BUILDING MATERIALS

Materials were selected on the basis of their suitability for the purpose, original cost, and to reduce future maintenance costs. Since interest in external appearance was created by a natural architectural expression of the plan organization, highly decorative materials were excluded. However, in order to give the building direction the fenestration on the main elevation was arranged in pattern, and header brick was used at accent points for a subtle change of pace in the brick masonry.

Queenstone limestone will be used for door sills because of its durability. Aluminum architectural projected windows, equipped with metal glazing beads will reduce cost of maintenance; a casement window has been included in each classroom to serve as an emergency exit. All exterior doors and frames will be metal, thus eliminating warping, possible swelling and shrinkage sometimes associated with the use of wood doors and frames; they will be weatherstripped against the elements.

The interior finishes selected will reflect savings in the original cost of the building, and will be satisfactory for the purpose.

Walls surfaces most subject to being soiled will be protected with a vitreous enamel surfacing; areas included will be corridor wainscots, toilet room wainscots and walls, also kitchen walls. Remainder of wall surfaces will be masonry

block painted, except in the administration section. Plaster will be applied to walls of the administration section and be finish painted.

Floor covering in the corridors and auditeria to be vinyl-asbestos tile because of the heavier traffic in these areas. In classrooms and administration areas where traffic will be lighter, asphalt tile will be installed. A rubber base will be installed throughout the building, except in rooms where resilient floor covering will not be installed. Toilet rooms to have ceramic tile flooring, and kitchen will have quarry tile paving in keeping with the nature of the facilities. Wood flooring in playroom will provide a proper surface for basketball and similar activities. Consideration should be given to an alternate proposal to have precast (or poured in place) terrazzo floor slabs installed in main entrance lobby and vestibules.

Acoustical tile ceilings will be installed in certain areas and omitted in others to balance the noise level factor. Ceilings will be suspended in some rooms to conceal piping for mechanical work, otherwise they shall be directly attached to the construction work above.

Roof construction over the major portion of the structure consists of metal decking covered with insulating board, $1\frac{1}{2}$" thick, and a vapor seal, providing a U factor of .18; over the playroom precast fibre plank will be installed having a U factor of .14; precast masonry plank and insulating board,

1½" thick, having a U factor of .15 will form roof over boiler room. The U factors noted above were used in calculating the heat loss through these surfaces.

STRUCTURAL DESIGN

The general approach to the selection of the structural system was influenced by the fire safety factor, time required to erect the building, availability of skilled labor, and its relationship to general construction work and work of the mechanical trades in respect to economy of installation of the work of such trades. Fire safety was a prime factor, therefore fire resistant materials was a basic element of consideration; savings in insurance cost was an added incentive.

After analyzing the size of the project as related to time required for completion, it was concluded the structure could be completed in time for the start of a school year and save the cost of using the permanent heating system for temporary heating. This would require proper scheduling of construction operations and selection of method of construction.

The use of a steel frame was selected in lieu of the wall bearing principle to assist construction progress and effect savings, which would result from the accelerated operations. This would be accomplished by placing and sealing roofs over various areas as determined by building expansion joints immediately following the erection of structural steel, thereby making areas available for work by all trades during all kinds of weather with the aid of temporary tarpaulin enclosures.

Steel decking was incorporated in the requirements of the working drawings for roofs and second floor to provide immediate working platforms for all trades, should low temperatures delay placing concrete slabs, etc. The metal decking will simplify the second floor construction by omitting the normal reinforced concrete subfloors under tile floors.

Structural columns, etc., adjacent to suggested additions indicated on the drawings are designed to receive loads from such additions.

HEATING AND VENTILATING SYSTEM:

The heating system is a forced hot water system, utilizing light oil or gas-fired, fire tube package boilers. The boilers also furnish heat required for the domestic hot water storage tank.

Provisions have been made in the heating system for expansion to twenty eight classrooms and other suggested future facilities indicated on the drawings.

Classroom temperatures are controlled by individual room thermostats, which modulate hot water coil valves and the fresh air return air dampers in the unit ventilators. In the morning when unit fan comes on (as determined by time-clock) the fresh air damper is closed and all return air is circulated by the unit. As the room approaches the day-time setting of the thermostat, the fresh air damper will open to admit up to 30% outdoor air. As the temperature rises above

the setting of the room thermostat, the coil valve closes and more outdoor air is admitted up to full 100% outdoor air.

The fin radiation which is installed in classrooms to eliminate downdrafts and in other areas for full heating, will be supplied with scheduled water based on outdoor temperature to prevent overheating. Fin radiation and convectors are controlled by thermostatically actuated control valves.

Playroom and auditeria with large air handling units are controlled in a manner similar to classroom unit ventilators.

The unit ventilators and fin radiation under windows will be piped in a series-reverse return system fed from mains installed in the first floor corridor ceiling.

Large heating and ventilating units located in fan room will heat and ventilate playroom and auditeria by means of sheet metal ductwork, plus ceiling or wall diffusers.

Toilet rooms, kitchen, teachers' rooms, janitor's closet will be ventilated through sheet metal ductwork connected to exhaust fans located on the roof.

It is suggested, the adapting architect review various fuel costs in the area and make such changes as deemed advisable by findings.

PROVISIONS FOR FALLOUT SHELTER

A ventilation system is provided in fallout shelter for both fallout shelter use and for regular use.

This system consists of a filter bank for filtering out radio-active particles, a centrifugal fan for drawing fresh air in through the filter bank and a system of registers and ductwork for distribution of the fresh air into the various occupied spaces.

The air is exhausted under pressure through the toilet rooms and emergency generator room and through the vestibule. Door between vestibule and stairwell contains louver for air exhaust to outside.

Main fresh air supply duct to fallout shelter contains hot water heating coil for tempering outside air. This coil is connected to the main heating system.

SANITARY AND WATER SYSTEM

Storm and sanitary lines are to be run in the crawl space in cast iron to a point 5'-0" outside the building. Extensions from this point will be made to street services, or other sanitary and drainage systems as site conditions may require.

Hot, cold, and recirculating piping will be installed in the first floor corridor ceiling space for easy access to shut-off valves.

Provisions have been made in the storm and sanitary lines for expanding the building to twenty eight classrooms and to accommodate other suggested future facilities indicated on the drawings. Such provisions have also been included in the hot and cold water systems.

It is suggested the adapting architect examine the site to determine the final exterior sewer connections. If public services are not available, designs for systems to dispose of sewage and storm water will be required.

A review of the kitchen equipment is advisable to determine its suitability as related to proposed feeding operation. Adjustments in sanitary and water systems may be required as a result of such study.

PROVISIONS FOR FALLOUT SHELTER

Emergency water supply system and sanitary facilities are provided in fallout shelter area. In addition roof conductor and storm drainage line in shelter area is re-routed so that it does not pass through shelter area.

Water supply system consists of 20 - 275 gallon water storage tanks located adjacent to shelter area. Gravity water line runs into shelter area terminating with 4-loose key operated water faucets.

Toilet facilities consists of 4 - 3-1/2 x 14', 1041 gallon tanks. Two (2) are located in boys' toilet and two (2) are

located in girls' toilet. Each tank contains 4 special built on toilet seats and a vent pipe connection with vent run to the outside.

ELECTRICAL SYSTEM

The system has been designed using materials of first class quality and latest design. Underwriter's Certificate of Approval indicating strict compliance to codes, rules and regulations of the National Electric Code will be required.

Provisions have been made in all systems to accommodate twenty eight classroom and other suggested facilities indicated on the drawings.

Service entrance to be at boiler room with main switch and meters located on exterior wall. The power company will be required to bring service to a vault room or pole, if such pole is not located more than 150 feet from the point of entrance.

3 phase, 4 wire 120/208 volt service will be required.

Main service disconnect and overload protection to be an air circuit breaker.

Main panel to be switch and fuse type with piano hinge type units. Lighting panel will be a thermal magnetic circuit breaker type.

Fluorescent lighting fixtures will be installed throughout the building, except in areas where burning hours are relatively low. The use of this type of fixture will reduce cost of power and maintenance, also reduce heat load, thus compensating for the slightly higher installation cost.

Key type switches will provide control for corridors, stairways, lobby and vestibules. Toggle type switches will provide local room control in all other cases. Exterior lighting will be controlled by a time clock. Convenience outlets have been located on a 12'-0" spacing and over each counter.

Public address and intercom sound systems, clock and program systems have been combined utilizing the speakers to transmit program signals within the building. Speaker and clock system wiring to be in a common conduit system. The master clock and sound console to be interconnected to accomplish the desired function. Sound system to provide for the following functions:

(a) Announcements from office to any or all speakers.

(b) Receive and distribute AM-FM radio programs.

(c) Distribute programs or tape recorded programs. Phono turntable has been included. No tape recorder.

(d) Distribute programs originating on the stage.

(e) Sound emergency signals.

(f) Sound program signals automatically.

(g) Sound air raid alarm.

Intercom system is arranged with a separate channel to individual rooms. Call in switches have been provided in classrooms and similar locations. In certain rooms such as the library, a handset phone could be provided to allow private conversation over the speaker line.

Master clock will be regulated, minute impulse type, fed from the constant power panel. Program machine to be six circuit type run by master clock and connected to sound system console. Program set-up will be included in console.

Fire alarm system will be a general alarm, non-code, supervised system having stations, thermal detectors and gongs. It shall be powered by 120 volt constant supply with no batteries for either operating or supervising current. Stations are located to give complete coverage. The exterior gong is an optional feature. Drill signals should originate from various locations in building to test operation; therefore office station has been omitted. However, the disarrangement station will be located in office to indicate when the system is inoperative. Provisions have been made in control panel to permit extension to municipal alarm circuit.

Lightning protection will be installed for the boiler stack. It was omitted from the remainder of the building, because the possible extent of structure does not warrant the additional investment.

Emergency lighting could be provided by a 32 volt, nickel-cadmium, automatically recharging battery set for emergency lights in playroom, auditeria and paths of egress.

It is suggested consideration be given to an emergency system employing a gasoline generator as a source of power. Under this arrangement the emergency lights described above would be normally Off, and go On automatically upon generator start-up. Constant power will be provided for exit lights, fire alarm, communication, clock and program systems, essential (sump pump) motors would be included. The power would be from a separate panel fed through a transfer switch connected to the normal power source and emergency generator. Generator controls to be arranged for manual transfer and use of generator for normal emergency power or fall out shelter emergency power.

Break glass stations have been provided at boiler room doors, which will disconnect the boilers and pumps in case of emergency.

No provisions have been made for television reception. This facility is individual to the particular school district and should be determined on this basis.

Electrical work will include a weatherproof push button at receiving room door, bell to be located in kitchen.

The adapting architect will wish to review local power source and requirements, public telephone system, television requirements, kitchen equipment, and emergency lighting system to ascertain if changes are required to meet local conditions.

PROVISIONS FOR FALLOUT PROTECTION

The fallout shelter area has been developed electrically for dual use i.e. as a fallout shelter and for normal activities.

An emergency generator has been provided and switching has been arranged to facilitate use of the generator either for certain fallout shelter lighting and equipment or for normal emergency power requirements such as the Public Address System, Fire Alarm System and emergency lighting units in public assembly areas.

ADDITIONAL ARCHITECTURAL SERVICES BY THE ADAPTING ARCHITECT

The documents for the Standard School Plan, Type A-3 are complete within the scope of the program, however, do not constitute complete architectural service necessary to obtain proposals or erect the structure.

The services of the adapting architect will prove valuable in the selection of the site in advising in regards to it's suitability and in preparing the project for the bond issue vote.

After approval of the bond issue his services will be required to adapt the drawings and specifications to meet conditions at the site, and make other changes should the Board of Education decide to include optional facilities.

During the construction period the services of the adapting architect will include general supervision and inspection of the construction operations, color coordination, checking of shop drawings, reviewing of requests for payments on account, and advise on all matters pertaining to the building construction.

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